

HE
4491
S45
C44
1975
IGSL
UCB

bart impact program

PHOTO SURVEY OF DEVELOPMENT AND ACTIVITIES IN THE VICINITY OF BART STATIONS



no slip

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

DEC 18 1975

UNIVERSITY OF CALIFORNIA

BART
ba

101

TECHNICAL REPORT

The BART Impact Program is a comprehensive, policy-oriented study and evaluation of the impacts of the San Francisco Bay Area's new rapid transit system (BART).

The program is being conducted by the Metropolitan Transportation Commission, a nine-county regional agency established by state law in 1970.

The program is financed by the U. S. Department of Transportation, the U. S. Department of Housing and Urban Development, the National Science Foundation, and the California Department of Transportation. Management of the Federally-funded portion of the program is vested in the U. S. Department of Transportation.

The BART Impact Program covers the entire range of potential rapid transit impacts, including impacts on traffic flow, travel behavior, land use and urban development, the environment, the regional economy, social institutions and life styles, and public policy. The incidence of these impacts on population groups, local areas, and economic sectors will be measured and analyzed. The benefits of BART, and their distribution, will be weighed against the negative impacts and costs of the system in an objective evaluation of the contribution that the rapid transit investment makes toward meeting the needs and objectives of this metropolitan area and all of its people.

HE4491
S45 C44
1975
I6SL
UCB

PHOTO SURVEY OF DEVELOPMENT AND ACTIVITIES
IN THE VICINITY OF BART STATIONS

TECHNICAL REPORT



JULY 1975

FINAL REPORT

DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VIRGINIA 22151

PREPARED FOR

U.S. DEPARTMENT OF TRANSPORTATION

AND

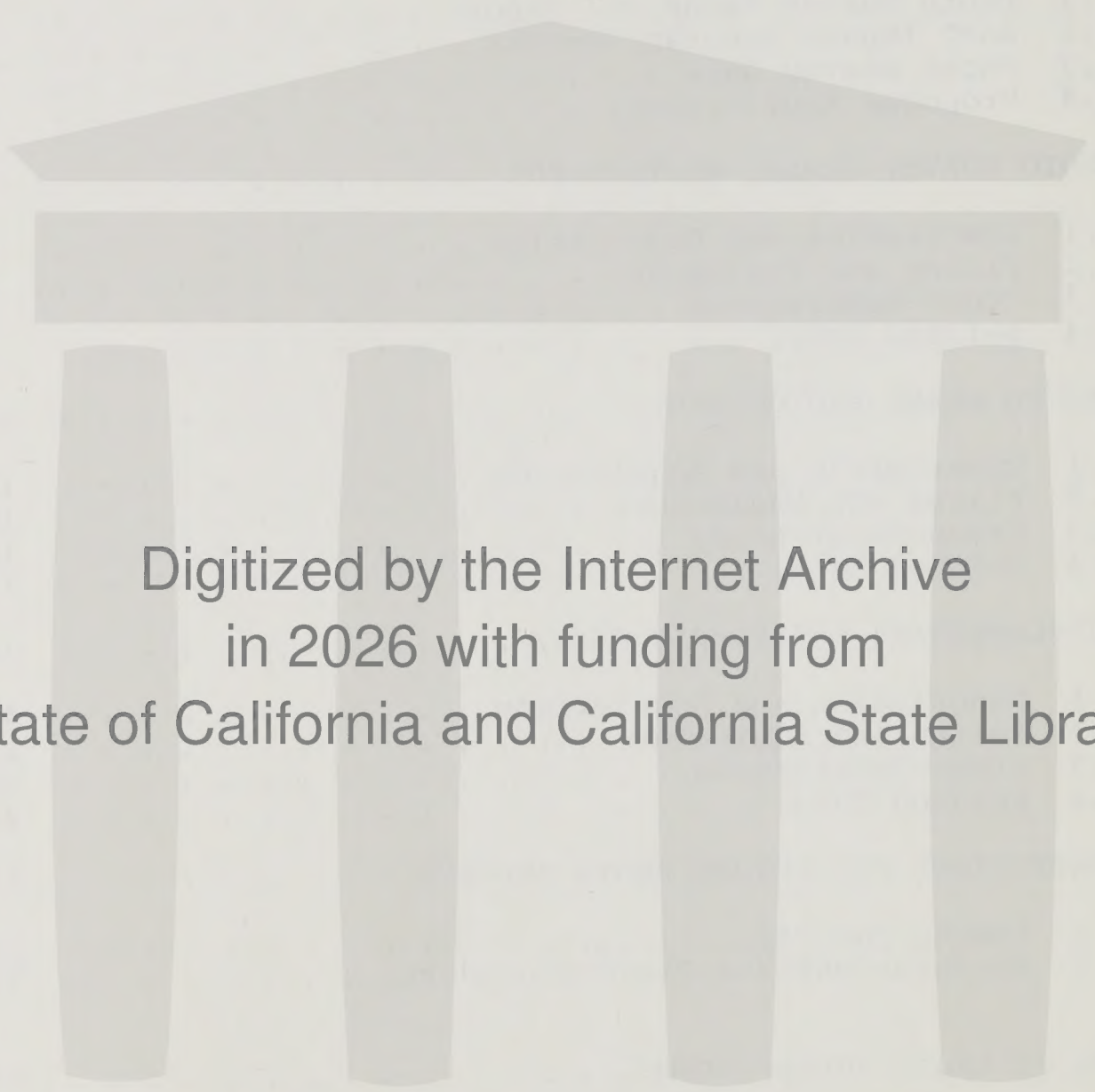
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No.
4. Title and Subtitle PHOTO SURVEY OF DEVELOPMENT AND ACTIVITIES IN THE VICINITY OF BART STATIONS - TECHNICAL REPORT		5. Report Date July, 1975	
7. Author(s) David L. Christensen		8. Performing Organization Rept. No. FR 5-17-75	
9. Performing Organization Name and Address Metropolitan Transportation Commission Hotel Claremont Berkeley, CA. 94705		10. Project/Task/Work Unit No. Task Order 17	
		11. Contract/Grant No. DOT-OS-30176	
12. Sponsoring Organization Name and Address U.S. Department of Transportation and U.S. Department of Housing and Urban Development Washington, D.C.		13. Type of Report & Period Covered Final Report	
15. Supplementary Notes Short Title: Photo Survey - Technical Report		14.	
16. Abstracts The purpose of the Photo Survey Technical Report is to present a description of the Photo Survey project development process along with useful technical information for those who use, maintain or update the Photo Survey. The Photo Survey is a record of development and activities in the vicinity of BART stations at given points in time. The record consists of three categories of data: ground level photos, aerial photos and supplementary assessor's land use information. The three kinds of data are cross-indexed by map overlays. Additional description of Photo Survey data, as well as detailed instructions for their retrieval and cross referencing may be found in the <u>Photo Survey Users Guide</u> (Christensen, 1975).			
17. Key Words and Document Analysis. 17a. Descriptors Aerial Photographs Assessments Ground Photographs Information Systems Instruction Manuals Land Use Real Property Urban Development			
17b. Identifiers/Open-Ended Terms BART Impact Program Photo Survey Station Areas			
17c. COSATI Field/Group			
18. Availability Statement This document is available to the public through the National Technical Information Service, Springfield, Virginia 22151		19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 39
		20. Security Class (This Page) UNCLASSIFIED	22. Price

The Contractor wishes to acknowledge the excellent assistance of MTC BART Impact Program staff in the preparation of this report as well as in other essential Photo Survey tasks. MTC appreciates the valuable contributions rendered by the CALTRANS Photography Unit, William Chaney, Bob Rose and Fran Johnston. Likewise, MTC appreciates the cooperation rendered by the following assessors and their staffs: Don Hutchinson, Assessor of Alameda County; E. F. Wanaka, Assessor of Contra Costa County; Joseph Tinney, Assessor San Francisco City and County, and Jack H. Estes, Assessor of San Mateo County.

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1
1.1 Photo Survey Technical Report	1
1.2 BART Impact Program Context	1
1.3 Photo Survey Data	2
1.4 Proposed Applications	4
2.0 PHOTO SURVEY AERIAL PHOTOGRAPHY	5
2.1 Description and Acquisition	5
2.2 Filing and Equipment.	6
2.3 Cross-Referencing	6
2.4 Related Data.	6
3.0 GROUND LEVEL PHOTOGRAPHY	10
3.1 Description and Acquisition	10
3.2 Filing and Equipment.	10
3.3 Cross-Referencing	11
3.4 Related Data.	13
4.0 SUPPLEMENTARY ASSESSOR'S DATA.	14
4.1 Description and Acquisition	14
4.2 Filing and Equipment.	22
4.3 Cross-Referencing	22
4.4 Related Data.	23
5.0 SUGGESTIONS FOR FUTURE PHOTO SURVEYS	25
5.1 Image, Quality.	25
5.2 Enumerations and Field Procedures	25
GLOSSARY OF PHOTO SURVEY TERMS.	27
REFERENCE	29
APPENDIX A CALTRANS Technical Supplement	A-1
APPENDIX B Julian Calendar	B-1



Digitized by the Internet Archive
in 2026 with funding from
State of California and California State Library

<https://archive.org/details/C123301947>

LIST OF FIGURES

<u>Figure</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1	Elements of the Photo Survey for a Typical Station Area	2
2	Typical Section of Index Overlay with Aerial Photograph	3
3	Diagram of Photo Survey Data Indexing Process	3
4	Summary of Aerial Photographic Information Acquired for this 1972-73 Urban Residential Environment Study	7
5	1972-73 Urban Residential Environment Study Areas Map.	8
6	Typical Ground Level Photo	12
7	Tape Format for Alameda County 1974-75 Secured Assessment Master File	16
8	Assessment Roll Printout Tape Format for Alameda and other Counties	18
9	Technical Specifications for Magnetic Tapes Acquired by the Photo Survey	19
10	Tape format for Contra Costa County 1974-75 Secured Role Master File	20
11	Table of Exemption Codes for Contra Costa County and their Photo Survey Equivalents	21
12	Photolog Van and Camera	A-3

1.0 INTRODUCTION

1.1 Photo Survey Technical Report

The purpose of the Photo Survey Technical Report is to present a description of how the Photo Survey project developed along with technical information which may prove useful to those who use, maintain or update the Photo Survey data. Additional description of Photo Survey data, as well as detailed instructions for their retrieval and cross referencing may be found in the Photo Survey Users Guide (Christensen, 1975).

1.2 BART Impact Program Context

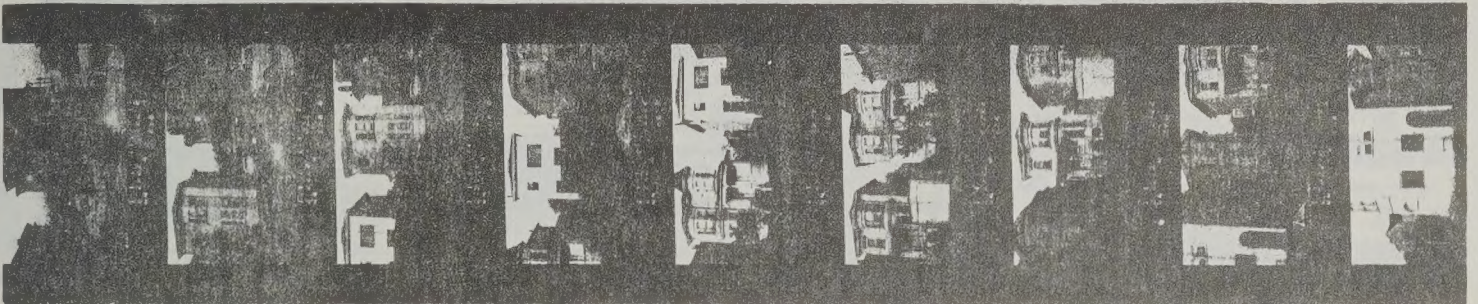
The BART Impact Program is a comprehensive effort to assess the physical, social and economic impacts engendered by the construction and operation of a major transportation element such as the Bay Area Rapid Transit (BART) system (MTC, 1974):

The focus of the program is on decisions, actions, and their results: tracing the consequences of the decisions that have produced BART and providing improved understanding to help public officials and citizens make wise decisions in the future. The findings of the program will be widely disseminated to inform decision makers in the Bay Area, in other metropolitan areas throughout the nation, and in the national and state governments.

Areas around BART stations are anticipated to be foci of various BART induced changes, and were therefore selected for detailed examination in the Photo Survey. The survey establishes a base of photographic and assessor data at the parcel level for areas within approximately one-quarter mile of the 34 BART stations.

1.3 Photo Survey Data

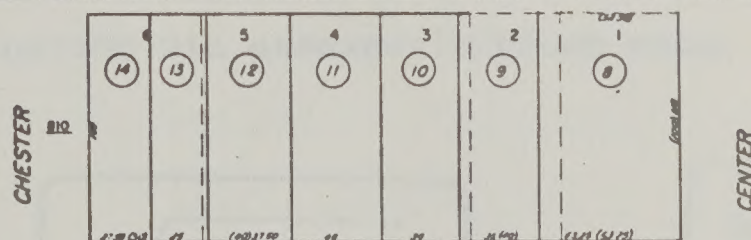
Figure 1 illustrates the three major components of Photo Survey data: ground level photos, aerial photos and supplementary assessor's data.



GROUND LEVEL PHOTOS: Approximately 1500 color transparencies of development fronting on public streets taken during the winter of 1974 and spring of 1975.



AERIAL PHOTOS: 1"=200' scale aerial photographs covering approximately one square mile taken in 1965, 1972, and 1975.



***THIS FILE IS FOR RAPT STATION 25 -- WEST OAKLAND

ACCOUNT NUMBR	SITUS ADDRESS	OWNER NAME AND ADDRESS	VALUATIONS	EXEMPTIONS
4 81 12 0		HALL FLORIDA W	LAND 1425 INV. 0	
			M + E 0 H.O. 1750	
	1480 8TH ST	1480 8TH ST	IMP. 900 REG. 0	
		OAKLAND CALIF 20	BUS. PP 0 PCT. 0	
			HH. PP 135 CODE 0	
	C/O		NTV 710	

SUPPLEMENTARY ASSESSOR'S DATA: Block maps and 1974-75 assessment roll data for approximately 800 parcels per station area.

Figure 1. Elements of the Photo Survey for a Typical Station Area

The three categories of Photo Survey data are cross-referenced by clear overlays designed to fit 1" = 200' scale aerial photographs of station areas. A section of aerial photograph and index overlay is illustrated in Figure 2.

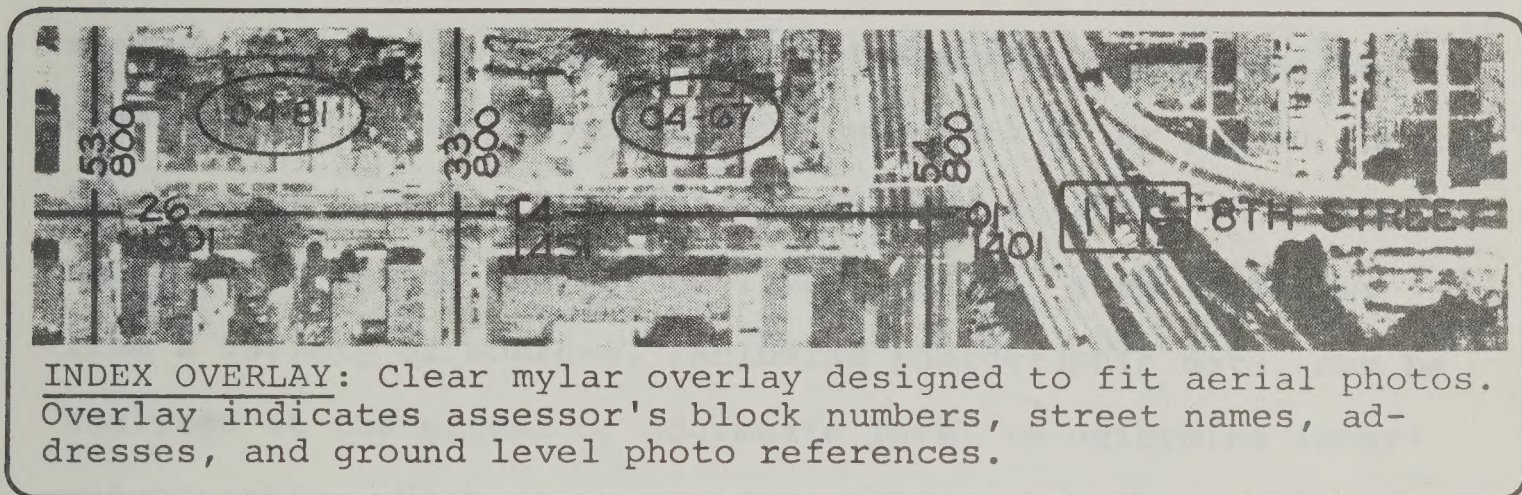


Figure 2. *Typical Section of Index Overlay with Aerial Photograph*

Aerial photos are cross-referenced by the overlay directly. As diagrammed in Figure 3, ground level photos and assessor's block maps are indexed by the overlay in combination with an aerial photograph. Assessment roll data is referenced to the overlay-aerial photo combination via assessor's block maps.

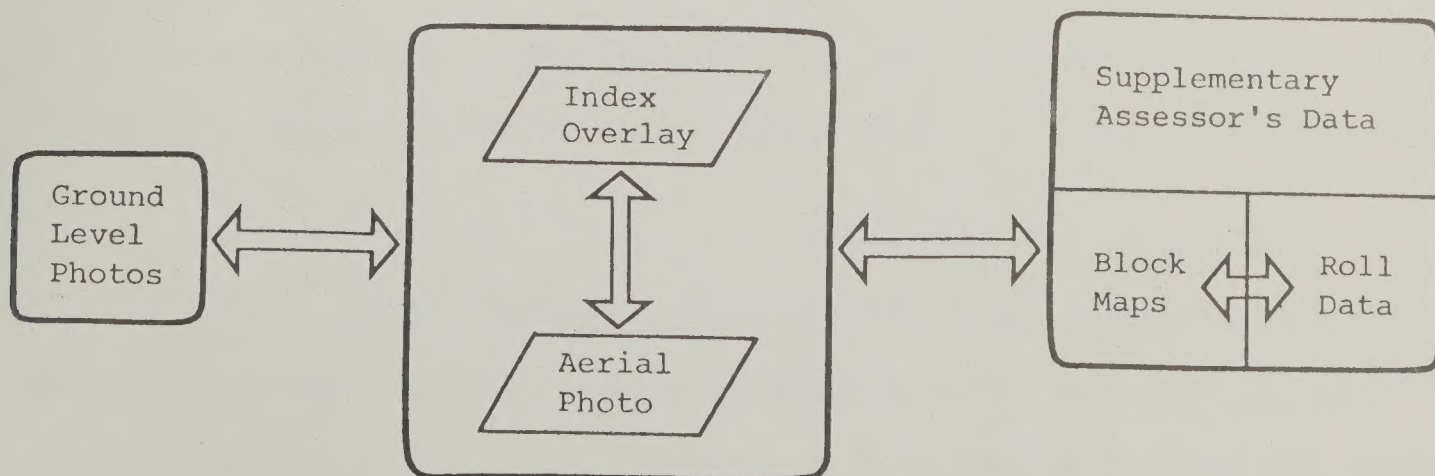


Figure 3: *Diagram of Photo Survey Data Indexing Process*

1.4 Proposed Applications

The Photo Survey data is expected to permit two basic types of analytical applications: At present, it provides an information storage and retrieval system for development around station areas at the parcel level, including a method for parcel identification of visual attributes of urban development which are recorded in aerial and ground level photos. Thus variables from a variety of sources, including photographic data, may be analyzed at the parcel or aggregate level to determine interrelationships which may be subject to BART influence. In the future, the Photo Survey data will allow detection and assessment of land use and urban development changes in station areas over time. An initial set of data has been collected for the 1974-75 period along with pre-construction aerial photos for 1965. The first repetition of the Photo Survey is scheduled for the summer of 1976. Once this follow-up data has been collected and processed, comparison of a variety of conditions, and BART's influence on them, will be possible.

2.0 AERIAL PHOTOGRAPHY

2.1 Description and Acquisition

The Photo Survey provides 1" = 200' scale reproducible aerial prints of approximately one square mile areas surrounding the 34 BART stations taken in 1965, 1972 and 1975. The 1965 series of aerial photos was produced by the CALTRANS Photography Unit from 1" = 1000' scale negatives taken by Cartwright Aerial Surveys, Inc., during May and June of 1965, as part of the Bay Area Transportation Study Commission's Land Use Inventory (BATSC, 1967). The Contractor supplied a list of BATSC photo identification numbers corresponding to present station locations and CALTRANS produced accurate 200' scale Chronaflex reproducible prints of designated station areas. A title block designed by the contractor was attached at the top of each print. Diazo paper copies were then produced and filed in the MTC data library.

The 1972 series of Mylar aerial prints was produced for the pre-BART Residential Environment Impact Study (Appleyard, et al., 1973) from 1" = 1200' scale negatives taken in August and September by Pugh - Nolte and Associates (now Hard - Pugh and Associates). Previously produced diazo paper prints were filed in the MTC data library.

The 1975 series of Chronaflex aerial prints was produced by the CALTRANS Photography Unit from 1" = 800' negatives taken by CALTRANS in March and April. Scaling of this set of aerial photos was determined from a set of 1972 station area photos on which the scale distance between two prominent intersections had been denoted by

the Contractor. USGS 1" = 2000' topographic maps were used as the reference for scale determination. Title blocks were attached, diazo paper prints were produced and filed in the MTC data library.

2.2 Filing and Equipment

1" = 200' scale reproducible and paper aerial prints are filed in a Plan Hold 500 MF-30 map file. The file has a maximum capacity of 1,000 30" x 42" maps which are hung from paper sheet hangers (Cat. #070SA-30). Working paper copies of the three series of aerial photos are filed by station number. Original reproducible copies are filed by series year at the rear of the file.

2.3 Cross-Referencing

1" = 200' scale aerial photos are cross-referenced to ground level photos and supplementary assessor's data through the use of the Photo Survey index overlays. Overlays are filed with paper prints for each station area and are identified by station name and number. Registration marks are provided on either side of the overlay and are identified to correspond to registration marks on aerial photographs.

2.4 Related Data

A set of aerial prints of the Key System rights-of-way taken in 1947 are available at the Institute of Transportation and Traffic Engineering Library, UCB. The Key System photos are scaled at 1" = 800', measure approximately 16" x 18", and cover station and channel areas for all of the Richmond line, the Oakland West and Rockridge stations and the Fremont line to Hayward.

Contact prints of aerial photos taken by BATSC in 1965 for the entire San Francisco Metropolitan Bay Area are available at the Cartography Department of the Association of Bay Area Governments (ABAG). These prints are at 1" = 1000' scale and measure 9" x 9". Larger prints of the 1965 BATSC aerial photography at 1" = 200' and measuring 42" x 48" are available from the Photogrametry Department, CALTRANS District 4 office in San Francisco.

The Pre-BART Urban Residential Environment Study (URES) produced a variety of aerial photographic data for 1972 in addition to 1" = 200' scale aerial prints of the 34 BART station areas. A summary description of this additional material is presented in Figure 4. As noted in figure 4, 1" = 1200' scale aerial prints were acquired for the entire BART right-of-way with the exception of the trans-bay tube.

Size & Type of Photo	Date Taken	Exposure Scale	Print Scale	Extent of Coverage
28" x 28" enlargement	15, 24 Aug. 1972	1" = 200'	1" = 50'	13 stations & 14 selected points ² ½ mi. x ½ mi.
14" x 28" enlargement	9 Sept. 1972	1" = 1200'	1" = 200'	12 selected points ² -- East Bay 2 selected points ² - S.F. 1 mile x ½ mile
9" x 9" contact	9 Sept. 1972	1" = 1200'	1" = 1200'	East Bay R.O.W. ¹ - 2 mi. x 2 mi.
	21 Sept. 1972	1" = 1200'	1" = 1200'	San Francisco R.O.W. - 2 mi. x 2 mi.
9" x 9" contact	9 Sept. 1972	1" = 300'	1" = 300'	All 34 BART Stations ½ mi. x ½ mi.
8½" x 9" cropped contact	15 Aug. 24 Aug. 1972	1" = 200'	1" = 200'	18 stations & 14 selected points along R.O.W. 1/3 mi. x 1/3 mi.
<u>PAST PHOTOGRAPHY</u> (i.e., just before clearance for BART CONSTRUCTION)				
9" x 9" contact	May, June 1963	1" = 250'	1" = 250'	34 stations & 14 selected points--2/5 mi. x 2/5 mi.

Notes

1. R.O.W.: BART Right of way
2. "Selected points" refers to the selected residential areas which are being studies as part of the Urban Residential Environment Study.

Figure 4 - Summary of Aerial Photographic Information Acquired for the 1972-73 Urban Residential Environment Study

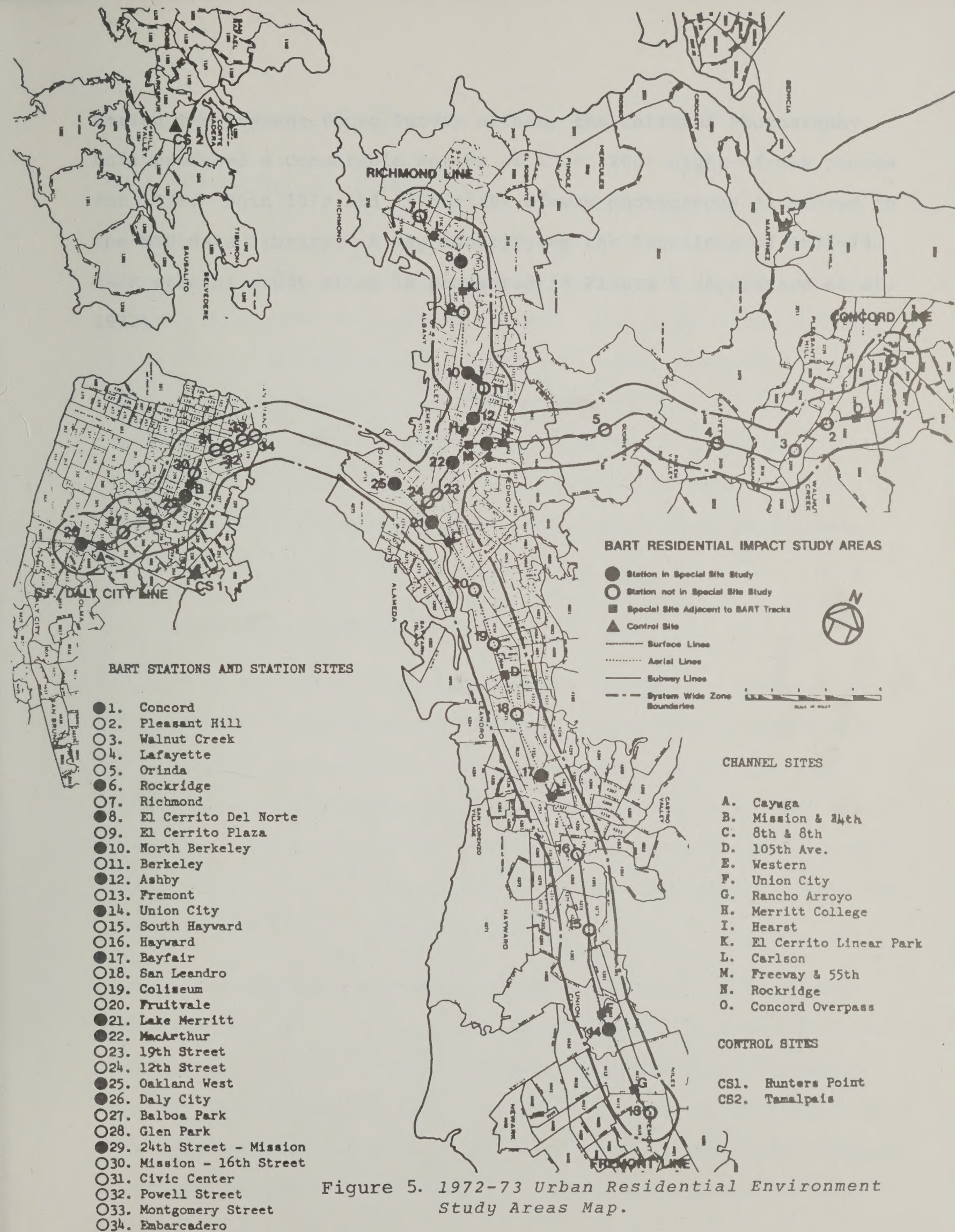


Figure 5. 1972-73 Urban Residential Environment Study Areas Map.

3.0 GROUND LEVEL PHOTOGRAPHS

3.1 Description and Acquisition

Fifty 4" microfilm reels containing approximately 54,000 ground level color photographs of development fronting on public streets in designated BART station areas were taken for the Photo Survey by the California Department of Transportation Photography Unit. This operation utilized a modified version of the California Photologging System (Division of Highways, 1972) in which 35 mm color microfilm photos are taken at regular intervals by a van-mounted camera. The photography procedures followed by CALTRANS are documented in Appendix A.

3.2 Filing and Equipment

Reels of photographs and CALTRANS record sheets were received at MTC labeled with the name and CALTRANS designated photolog number of the station area in which the photographs were taken. The Contractor was responsible for relabeling cartons to include station numbers and the numbers of streets contained on each reel. Record sheets were used by the Contractor in developing index overlays and were then filed in the MTC data library.

Ground level photos are readable using a 3M Model 500 MF reader-printer with a 12.05X lense. The 3M unit is designed to make positive image paper copies from black and white negative film, so copies made from color positive film, such as that used in the Photo Survey, are negative image and poor in quality. A black and white negative image copy of ground level photos for the Rockridge station area

has been obtained to demonstrate the printer's capacity for producing display copies. Paper copies produced by the 3M unit are heat and light sensitive and deteriorate over time unless protected.

3.3 Cross-Referencing

Each ground level photo includes a photo identification number at the top of the picture which specifies the Julian date (Appendix B), the photolog number of the station area, the street number within the station area, the frontage or side of the street, and the frame number along the street in which the picture was taken (Figure 6)

The overlay index uses components of the photo identification number to indicate on the aerial photo the block face in which any given ground level photo was taken. Typically, the block face end points are street intersections, but assessor's block end points are normally indicated whether they occur at street intersections or not. The overlay for each station area shows street names and numbers, and the code for designating street frontages - 1: east, 2: west, 4: north and 8: south.

The frame numbers of block face reference points were determined by the following procedure: Record sheets were provided by CALTRANS which indicated the frame numbers and street names of starting and ending intersections for all photographed streets. For those streets which are only one block long, the record sheet provided all the information necessary for referencing the street on the index overlay. Most streets however, extend beyond one block and thus require determination of intermediate block face reference points. This was accomplished by scanning the photographs on the

	YEAR	JULIAN DATE	PHOTOLOG NUMBER	STREET NUMBER	FRONTAGE	FRAME NUMBER
PHOTO IDENTIFICATION NUMBER	7	4-3	2	3-2	4-1	1-1-0 0 0 2 2

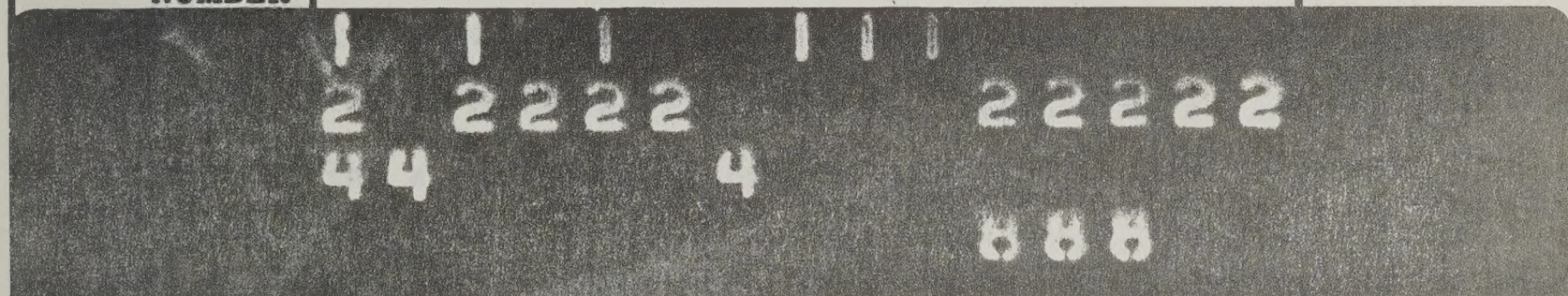


Figure 6. *Typical Ground Level Photo*

microfilm reader-printer, locating and then recording the frame numbers of intersection and other block face reference points.

Ground level photo references and other information shown on the index overlays was first recorded in pencil on tracing paper and then copied in ink on .004" Stabilene Cartographic Drafting Film. Finally a diazo working copy of the inked original overlay was made on clear plastic film stock and filed with aerial photo prints for the appropriate station area.

3.4 Related Data

Black and white appraiser's photographs of property acquired for BART stations and right-of-way are in dead storage but potentially retrievable through the BART Office of Real Estate. Pre-construction photos may also be sought in the archives of local museums, libraries and newspapers.

4.0 SUPPLEMENTARY ASSESSOR'S DATA

4.1 Description and Acquisition

Assessor's block maps and statistical land use information were acquired for approximately 1300 assessor's blocks in which some portion of the block was covered by Photo Survey ground level photography. Assessor's block determination was made by comparing assessor's block map indices with street maps on which photographed areas had been denoted by CALTRANS Photography Unit staff. Final editing and verification of block numbers was accomplished during the index overlay production process. Assessor's block maps were acquired between February and May 1975 by supplying assessor's offices with list of block numbers for station areas within their jurisdiction. Sample block maps from each county are illustrated in the Photo Survey User's Guide (Christensen, 1975).

Acquisition of supplementary statistical land use data presented a variety of problems and opportunities. Five types of supplementary parcel information were considered to be relevant within the context of the Photo Survey: (1) identifiers - assessor's account number, situs address and recorder's reference number; (2) assessed values of land and improvements; (3) names and addresses of owners; (4) land use or occupancy type designations; (5) additional description such as parcel and structure size, number of units etc. Furthermore, it was recognized that individual parcels of land remain one of the most enduring tiles in the urban mosaic and were therefore chosen as the basic data unit for the Photo Survey supplementary land use data file.

Public information compiled by county assessors offices appeared to be a viable source of statistical parcel level data required for the Photo Survey. Unfortunately, there currently exists such variety in data content, format and media between the assessor's offices in Bay Area counties that development of a consistent file, with comparable parcel information, presented a formidable task. Recognition of this problem, prompted the Contractor to conduct an initial investigation of alternative sources of parcel data.

Among the most comprehensive data sources identified during this reconnaissance were such real estate information services as Real Estate Data Inc. of Miami Florida and Microfisch Publishing Inc. of Napa, California. However, discussions with representatives of these firms indicated that the cost of acquiring data from such sources would be prohibitively expensive. Furthermore, the Photo Survey presented an opportunity to establish a computer-readable parcel file for BART station areas which would facilitate the inclusion of additional information and permit a variety of analytical data manipulations. The only feasible avenue for acquiring machine-processable data appeared to be directly from county assessor's offices. Alameda County was selected for initial contact because it had an established assessment roll tape lease procedure and contained the largest number of BART station areas.

After consultation with BART Impact Program personnel, the Alameda County Assessor's Office agreed to lease a copy of the 1974 Secured Assessment Master Tape to MTC for a 10-day period. As indicated in the file format shown in Figure 7, the tape provides parcel identifiers, assessed values, owner's names and addresses,

POSITION	FIELD DESCRIPTION	POSITION	FIELD DESCRIPTION
1 - 13	<u>Account Number:</u> 3 = Alpha = Map Volume Number 4 = Block Number 3 = Parcel Number 2 = Subparcel Number	91 - 95	<u>NTV:</u> Net total Value; assessed amount (land plus improvements minus exemptions).
14 - 18	<u>Code Area:</u> Taxation Code, as listed in "County of Alameda - State of California - Composite Tax Rates by Code Area", compiled in the offices of Donald M. Parkin, Auditor Controller of Alameda County.	96 - 100	<u>Penal:</u> Penalty added to the assessed value of Business Personal Property, as provided by law.
19 - 50	<u>Situs Address:</u> Location of Assessed property.	101	<u>Regular Exemption Code</u> 1 - Veteran's 6 - School 2 - Hospital 7 - Library 3 - Welfare 8 - Museum or College 4 - Cemetery 0 - Other Exemption or 5 - Church No Exemption
51 - 100	<u>Valuations and Exemptions</u> (Packed decimal, 5 bytes each) Reflects assessed value. 51 - 55 <u>Land</u> 56 - 60 <u>M & E:</u> Machinery and Equipment; items reported on Property Statements, used in the conduct of business and not intended for sale, which because of its nature are assessed as improvements. 61 - 65 <u>Improvements:</u> Permanent structures. 66 - 70 <u>B.P.P.:</u> Business Personal Property; tangible items reported on Business Property Statements used in conducting business. 71 - 75 <u>H.P.P.:</u> Household Personal Property, items such as used in rental of apartment housing. 76 - 80 <u>Inv. Ex.:</u> Inventory Exemption; represents 50% of the assessed value of Business Inventory. 81 - 85 <u>H.O. Ex.:</u> Homeowner's exemption; amount allowed for owner whose principal place of residence is the assessed property. 86 - <u>Reg. Ex.:</u> Regular exemption; amount for exemption other than homeowners (e.g. veterans, welfare, cemetery)	102-103	<u>Penal %:</u> Represents Penalty Percentage as provided by law.
		104-105	<u>Exempt %:</u> Represents exempt percentage as provided by law.
		106-109	Filler
		110-124	<u>Recorder's Series and Date:</u> Number's and Dates shown on recording documents.
		125-174	<u>Owner's name</u>
		175-264	<u>Mailing Address</u> 175-199 Number and Street 200-224 City and State 225-229 Zip Code 230-264 C/O Name
		265-323	Filler
		324-325	<u>Apartment Penalty %:</u> (Packed Decimal) Penalty added to the assessed value of Apartment Personal Property as provided by law.
		326-360	Filler

Figure 7. Tape Format for Alameda County 1974-75
Secured Assessment Master File.

exemption values and other information. Potentially useful data such as land use designations and physical descriptions of the property are not available on the tape and are deemed by the Assessor's Office to be confidential information as defined by the California Revenue and Taxation Code. Some land use data may be developed, however, based upon exemption information which is available. The County Recorder's deed series reference and transfer date is also available and may prove useful for some research applications.

Once the Secured Assessment Master Tape was acquired, a number of steps were necessary to produce usable printout of this information for the Photo Survey. First, a tape subfile containing information for assessor's blocks in designated Photo Survey station areas was produced by Active Data Processing of San Leandro. This subfile was then processed by MTC staff to produce a printout tape with blocks grouped by station area and having the file format presented in Figure 8. Development of a final print tape entailed the deletion of a few blocks which had erroneously been included as well as the inclusion of key punched data for a few blocks which had been omitted. Magnetic tape technical specifications are presented in Figure 9.

Experience gained with Alameda County was helpful in establishing a general context within which the utility and accessibility of assessor's data from the remaining three counties could be reviewed. However, variations in data systems and administrative procedures required an individualized approach to each situation.

<u>POSITION</u>	<u>FIELD DESCRIPTION</u>	<u>POSITION</u>	<u>FIELD DESCRIPTION</u>
1-13	<u>Account Number</u>	110-118	<u>Recorder's Series Number</u>
1-8	Photo Survey Block Designation	119-124	<u>Transfer Date (MMDDYY)</u>
9-11	Parcel Number	125-174	<u>Owner's Name</u>
12-13	Subparcel Number	175-264	<u>Mailing Address</u>
14-18	<u>Spaces</u>	175-199	Number and Street
19-50	<u>Situs Address</u>	200-224	City and State
19-20	Spaces	225-229	Zip Code
21-25	Number	230-264	c/o Name
26-45	Street Name	265-328	<u>Spaces</u>
46-50	Spaces	329-378	<u>Valuations of Land and Improvements*</u>
51-100	<u>Spaces</u>	329-338	Land
101	<u>Regular Exemption Code:</u>	339-348	Machinery and Equipment
1 - Veteran's		349-358	Improvements
2 - Hospital		359-368	Business Personal Property
3 - Welfare		369-378	Household Personal Property
4 - Cemetary		379-408	<u>Exemption Values*</u>
5 - Church		379-388	Inventory Exemptions
6 - School		389-398	Home Owner's Exemption
7 - Library		399-408	Regular Exemption
8 - Museum or College		409-418	<u>Net Total Value*</u>
0 - Other Exemption or No Exemption			
102-103	<u>Spaces</u>		
104-105	<u>Percent Exempt</u>		
106-109	<u>Spaces</u>		

*See Descriptions of Categories in Figure 7.

Figure 8. Assessment Roll Printout Tape Format
for Alameda and Other Counties.

SOURCE	DESCRIPTION	CODE	DENSITY BIP	LABELS	BLOCKAGE	RECORD LENGTH	NUMBER OF REELS
Alameda County	1974 Secured Assessment Master Tape	9 track EBCDIC	1600	Unlabeled	7216 bytes/block	328	3
Active Data Processing	1974 Secured Assessment Master Tape (Alameda County Sub-file)	9 track EBCDIC	800	Unlabeled	Unblocked	328	1
Contra Costa County	1974-75 Secured Roll Master File (Edited Secured Master File)	9 track EBCDIC	1600	Labeled	3000 bytes/block	600	1
San Francisco City & County	1974-75 Assessment Role (Edited Secured Master File)	9 track EBCDIC	800	Unlabeled	6200 bytes/block	310	3
San Francisco City & County	1974-75 Assessee Ownership File	9 track EBCDIC	800	Unlabeled	6320 bytes/block	80	2
San Francisco City & County	Current 1975 mailing Address File	9 track EBCDIC	800	Unlabeled	6364 bytes/block	172	2
San Mateo County	1974-75 Assessment Roll (Photo Survey Sub-file)	9 track EBCDIC	800	Unlabeled	Unblocked	418	1

Figure 9. Technical Specifications for Magnetic Tapes
Acquired by the Photo Survey.

<u>POSITION</u>	<u>FIELD DESCRIPTION</u>	<u>POSITION</u>	<u>FIELD DESCRIPTION</u>
1-10	<u>Account Number</u>	285-307	Spaces
1-3	Map Number	308-315	<u>Recorder's Deed Number</u>
4-6	Area Number	316-321	<u>Transfer Date</u> (MMDDYY)
7-9	Parcel Number	322-391	Spaces
10	Check Digit	392-406	<u>Valuations</u> (packed decimal)
11-16	Spaces	392-396	Land
17-46	<u>Owners Name</u>	397-401	Improvements
47-49	Spaces	402-406	Personal Property
50-80	<u>Second Owner</u>	407	Spaces
50	"c" if c/o	408-434	<u>Exemptions</u> (packed decimal)
51-80	second owner's name	408-409	1st Exemption Code*
81-87	Spaces	410-411	1st Number of Applications
88-175	<u>Mailing Address</u>	412-416	1st Exemption Value
88-117	Street Name	417-418	2nd Exemption Code*
118-121	Suffix	419-420	2nd Number of Application
122	Odd or Even Side	421-425	2nd Exemption Value
123-127	Number	426-427	3rd Exemption Code*
128-131	Fraction	428-429	3rd Number of Application
132-140	Apartment Number	430-434	3rd Exemption Value
141-170	City and State	435-600	Spaces
171-175	Zip Code		
176-226	Spaces		*Exemption code abbreviations are presented in Figure 11.
227-284	<u>Situs Address</u>		
227-256	Street Name		
257-260	Suffix		
261-261	Odd or Even Side		
262-266	Number		
267-270	Fraction		
271-279	Apartment Number		
280-284	City Abbreviation		

Figure 10. Tape Format for Contra Costa County 1974-75
Secured Role Master File.

Contra Costa County supplied an edited copy of their Secured Master File, with the file format presented in Figure 10 and technical specifications as shown in Figure 9. This file was re-formatted by MTC staff to fit - as closely as possible - the print format which had been developed for Alameda County. One area requiring special attention in the re-formatting process was the treatment of exemption categories. Contra Costa County uses sixteen exemption categories while Alameda County has only ten. Therefore the conversion table presented in Figure 11 was used in coding Contra Costa County categories in terms of Alameda County equivalents.

San Mateo County supplied a tape copy of assessment roll data for the 50-block, southern portion of the Daly City BART station area. County data processing staff followed the MTC-provided format shown in Figure 8.

<u>Contra Costa County Abbreviation</u>	<u>Identification</u>	<u>Photo Survey Equivalent</u>
HO	Home Owner's	Home Owner's
BV	Blind Veteran	Regular #1
PV	Paraplegic Veteran	Regular #1
RV	Regular Veteran	Regular #1
PL	Public Library	Regular #7
PS	Public School	Regular #6
SC	Parochial School	Regular #6
LC	Intermediate School	Regular #6
WE	Welfare	Regular #3
CM	Cemetary	Regular #4
CG	College of University	Regular #8
CH	Church	Regular #5
HP	Hospital	Regular #2
EI	Business Inventory	Inventory Exemption
PM	Museum	Regular #8
OT	Other	Regular #0

Figure 11 - *Table of Exemption Codes for Contra Costa County and their Photo Survey Equivalents*

San Francisco City and County required a relatively large re-formatting effort because the data needed for the Photo Survey had to be merged from three separate files: the assessment roll file, ownership file and mailing address file. The task was further complicated by the fact that the mailing address file had been constantly updated and was no longer entirely consistent with the other two files which had been generated in the spring of 1974. Processing of these files was not completed at the time of production of this report, however, it is expected that the final Photo Survey print tape will closely follow the format used for the other three counties.

4.2 Filing and Equipment

Assessor's block maps for each station area are bound in 18" x 22" portfolios and filed on labeled shelves in the MTC data library. 11" x 15" volumes of assessment roll printout are filed on labeled shelves below the block map portfolios. Magnetic tapes of assessment roll data are stored in the MTC tape storage facility.

4.3 Cross-Referencing

Assessor's data is referenced to Photo Survey aerial and ground level photographs at the assessor's block level via block designations recorded on the Photo Survey index overlay.

Using the index overlay and an engineer's scale, it is possible to visually cross-reference 200' scale aerial photographs and assessor's block maps at the parcel level. Once a parcel has been identified on an assessor's block map, the assessment roll statistics may be located

using the assessor's account number which is composed of the Photo Survey block designation, the parcel number and the subparcel number, if any. Likewise, once the parcel has been identified on an aerial photograph, the corresponding ground level photo(s) may be determined as described in Section 2.3 of this report.

4.4 Related Data

A general discussion of land use data sources relevant to the Photo Survey is presented by Skaburskis (1975). Although considerable information exists, it remains difficult to find comprehensive, detailed information that is comparable on a regional basis. County assessor's offices present a potential source of additional land use data if adequate safeguards can be devised to protect their confidentiality. Another potentially useful source of comparable land use information at the parcel level is the reverse telephone directory (indexed by address) available on a lease basis through Pacific Telephone Co.

A number of sources of historical land use and urban development data also exist for various periods. However, problems of incomparability and limitations in depth, detail and coverage frequently characterize historical data as well:

- Assessor's office data libraries may contain useful historical information, but pose problems of access and confidentiality.
- Land use and other environmental data were collected at the parcel level by the 1972-73 Urban Residential Environment Study for 18 BART station areas and for 14 other selected areas (Appleyard et al, 1973).

- In 1970-71, the Contra Costa County Planning Department conducted a county-wide land use study at the parcel level and established a machine readable data file (CCCPD, 1971).
- Sanborn maps record land use and development characteristics for a number of BART station areas. A collection of sanborn maps for the years 1900 to about 1950 is on file at the Bancroft library, UC Berkeley. Many local planning agencies maintain current Sanborn maps or similar records of development characteristics within their jurisdictions.
- 1967 BATSC Land Use Inventory data at the sub-block level of stratification may be available in the MTC archives (BATSC 1967).

5.0 SUGGESTIONS FOR FUTURE PHOTO SURVEYS

5.1 Image Quality

In order to get the maximum possible frontage elevation into the ground level photo field of view, the CALTRANS Photography Unit camera was tilted upward from a horizontal camera angle. One consequence of this adjustment was the under exposure of many frames due to automatic exposure settings based on sky illumination and frequently direct sunlight. The next Photo Survey is scheduled for the summer of 1976 and the relatively higher angle of the sun in that season should have a beneficial effect, but other steps might be taken to insure acceptable image quality when the Photo Survey is repeated. One possible strategy would be to always photograph north-south streets in the middle of the day. Alternatively, the camera metering system could be modified to establish exposure settings based on illuminations levels at the lower portion of the frame.

5.2 Enumeration and Field Procedures

In many ways, it would be advantageous to conduct future Photo Surveys in a manner as similar as possible to this first one. If streets are re-photographed using the same equipment and procedures used in the present survey then a relatively small effort will be required to update the index overlays used to cross-reference Photo Survey data. However, future needs or conditions may present an opportunity to modify and improve various enumeration and field procedures used in the ground level photography effort. The following suggestions are offered:

- Synchronization of frames with identifier data sometimes proved erratic. Furthermore, the quasi-binary number display is rather awkward and hard to read. Consideration should be given to modification or possible replacement of photo identification equipment, assuming a satisfactory alternative is available.
- Starting and ending frames for photographed streets were usually taken of development fronting on streets rather than at the center of initial and final street intersections. Frame reference points on index overlays are ideally suited for mid-intersection frame location and if field procedures adopted this convention, a significant increase in indexing accuracy could be achieved.
- The two downtown Oakland station areas (Oakland City Center and Oakland 19th Street) were combined into one photolog area for the initial Photo Survey. Since every other site corresponds to only one BART station, it seems desirable to attain consistency by dividing this area in future Photo Surveys.
- The photolog number itself bears no relation to any other enumeration systems and should be replaced by the station number as the station area identifier for future surveys.

GLOSSARY OF PHOTO SURVEY TERMINOLOGY

AERIAL PHOTOGRAPHS

Normally refers to 1" = 200' scale prints of station areas. Sets of such prints for the 34 BART stations are available for 1965, 1972 and 1975.

ASSESSED VALUE

Value of real property used by county assessors in computing property tax. By law the assessed value should equal 25% of the property's full market price.

ASSESSMENT ROLL DATA

Assessment roll data available in the Photo Survey consists of the assessor's account number, situs address, owner's name and mailing address, property values, tax exemptions, recorder's reference series number, and the date of latest transfer.

ASSESSOR'S ACCOUNT NUMBER

Unique parcel or subparcel identifier consisting of the block designation, parcel number and subparcel number, if any.

BLOCK DESIGNATION

Unique assessor's block identifier consisting of the assessor's map volume number and block number within the volume.

BLOCK FACE

Portion of a street block fronting on one side of the street between frame reference points indicated on a Photo Survey index overlay.

BLOCK MAP

Assessor's map of parcel boundaries for one assessor's block.

FRAME REFERENCE NUMBER

Number to the right of frame reference points on an index overlay indicating the frame number of the ground level photo taken at that point.

FRAME REFERENCE POINT

Point on index overlay marked by a + and indicating an intersection or other block face end point.

FRONTAGE

Land adjacent to one side of a street.

FRONTAGE CODE

One digit identifier of side of street

GROUND LEVEL PHOTO

35 mm color transparency of development and activities fronting on public streets in BART station areas taken by CALTRANS Photography Unit.

INDEX OVERLAY

Clear plastic overlay designed to fit 1" = 200' scale aerial photographs of a BART station area and index Photo Survey photographic and supplementary assessor's data.

PHOTO IDENTIFICATION NUMBER

A unique 15 digit identifier of ground level photographs appearing at the top of each frame, and composed of the Julian date the photo was taken, photolog number, street number, frontage code and frame number.

PHOTO INTERPOLATION GUIDE

Paper rule used in conjunction with frame reference numbers to locate the frame number and viewpoint of ground level photos on 200' scale aerial photographs.

PHOTO SURVEY STREET

Street segment for which ground level photos are available.

PHOTOLOG NUMBER

Two digit identifier of BART station areas used in the photo identification number.

STATION AREA

Area within approximately one-quarter mile of BART stations for which Photo Survey data is available.

STATION NUMBER

Two digit identifier of BART station areas used to reference Photo Survey data.

STREET NUMBER

Two digit identifier of Photo Survey streets.

SUPPLEMENTARY ASSESSOR'S DATA

Assessor's block maps and assessment roll data.

REFERENCES

Appleyard, D., F. Carp, et al. BART Residential Impact Study Report on Station and Channel Typology. (Berkeley: Institute of Urban and Regional Development, UCB) August 1972.

Appleyard, D., R. S. Betts, D. Christensen and S. S. Ridge. Rationale and Procedures for Collection of Behavioral and Environmental Data. (Berkeley: Institute of Urban and Regional Development, UCB) June 1973.

Bay Area Transportation Study Commission. Land Use Inventory Procedural Manual. (Berkeley: BATSC) March 1967.

California Division of Highways. California Photologging System. (Sacramento: Division of Highways) July 1972.

Christensen, David. Photo Survey User's Guide. (Berkeley: Metropolitan Transportation Commission) July 1975.

Contra Costa County Planning Department. Land Use and Transportation Study. (Martinez: CCCPD) August 1971.

Metropolitan Transportation Commission. A Description of the BART Impact Program. (Berkeley: MTC) March 1974.

Skaburskis, Andrejs. Survey of Data Sources for the Land Use and Urban Development Project. (Berkeley: Metropolitan Transportation Commission) June 1975.

Appendix A

CALTRANS TECHNICAL SUPPLEMENT

Introduction

The Photography Unit of the California Department of Transportation (CALTRANS) was commissioned to produce 1975 Photo Survey aerial and ground level photography. The CALTRANS Photography Unit regularly produces aerial photographs for departmental progress reports, route planning, and related purposes. Therefore necessary equipment and experienced personnel were available for producing aerial photographic data for the Photo Survey.

Ground level photographs for the Photo Survey were produced using a modified version of the CALTRANS Photolog System (Calif. Div. of Highways, 1972). Basically the Photolog System consists of a van mounted camera, a data recording device to place pertinent information on the film, and a trailing fifth wheel to trigger the shutter at measured distances. Using the Photolog equipment and procedures, the Photography Unit maintains a current file of ground level photographs of the State Highway System.

The following technical information on equipment and procedures used in conducting aerial and ground level photography for the Photo Survey has been supplied by the CALTRANS Photography Unit.

Aerial Photography

1. Camera: Fairchild K-17 with a 12-inch cone and a 12-inch

f4 Aero Ektar lens. This camera utilizes a roll film magazine and produces negatives in a 9" x 9" format. The shutter is a between-the-lens type and was operated at 1/225 second exposure.

2. Film: Kodak TR1-X film in 9 1/2" x 250' roll.
3. Aircraft: Cessna 206, modified for aerial photography. The aircraft was flown at an altitude of 9,600 feet to yield negatives with a scale of 1" = 800'.
4. Reproducible Aerial Prints: Chronaflex film enlarged on a Salzman 10" x 10" enlarger. All of the reproducible prints produced by CALTRANS were continuous tone rather than screened. This technique requires a low contrast image so that the resultant paper diazo prints will be of proper viewing contrast. This is accomplished by diluting the photographic developer used to produce the Mylars.

Ground Level Photography

1. Photolog Van: Standard Dodge windowed van with automatic transmission. For the BART impact study a custom roof camera mount was designed, allowing the camera to be oriented 90° to the right or left of vehicle travel. This orientation makes it possible to photograph both block faces on one way streets (figure 12).
2. Camera: Automax G-3 pulse camera with a four-sprocket pull down that takes a single frame photo on 35mm film. About

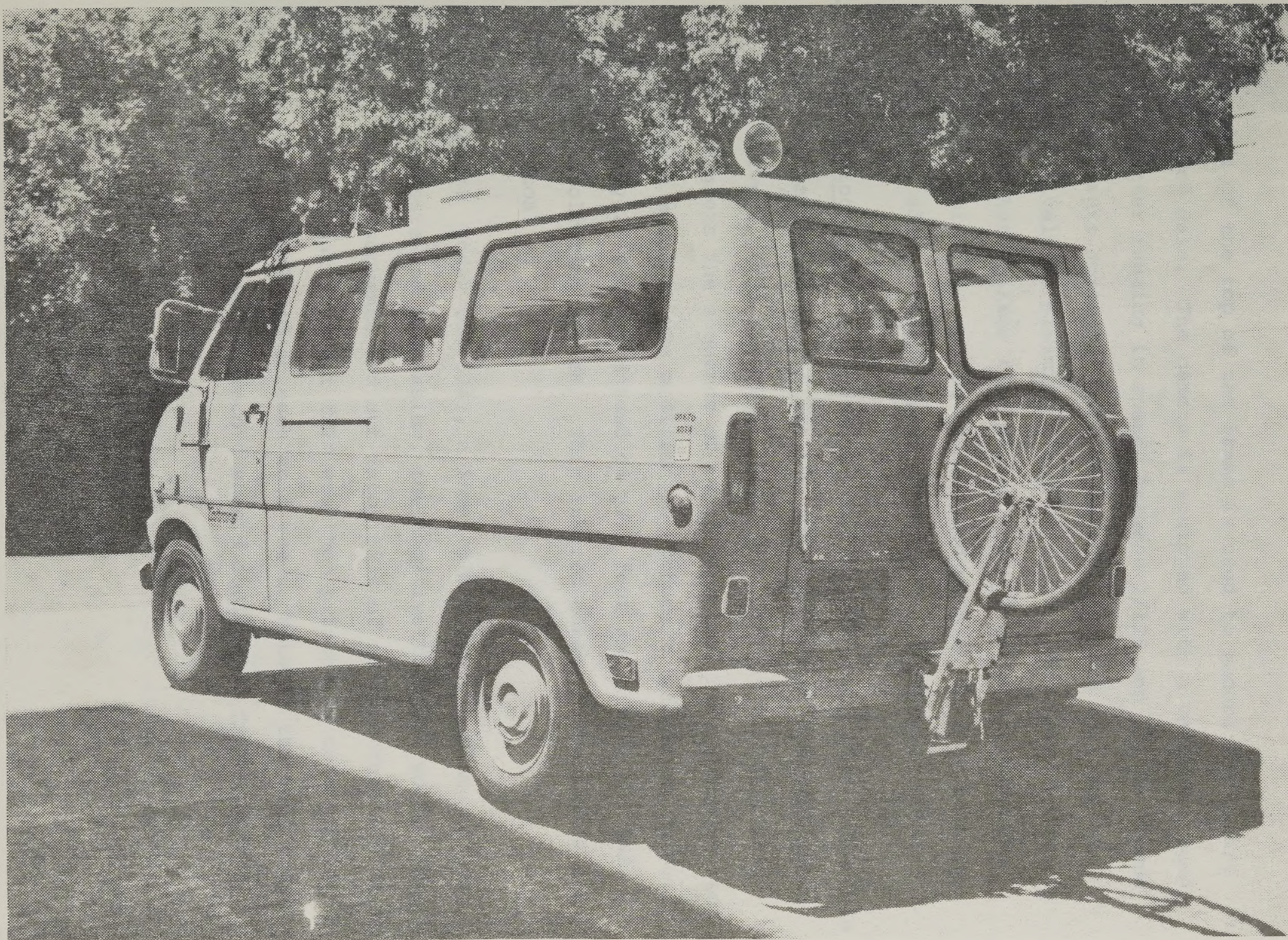


Figure 12. *Photolog Van and Camera*

1/4 of the top of the frame is used to record the binary coded data. The camera is equipped with a variable speed shutter ranging in speeds between 1/125 and 1/1000 second exposure duration. 1/1000 second exposure was used exclusively to minimize image movement. The lens used was a 20mm Auto-Nikkor f3.5 with a Apex-35 automatic exposure control. The camera is equipped with a 400 foot magazine that allows taking 6,400 photos without changing film.

3. Photocorder: ADTROL Model RKBCD-15/10 phtocorder. The data was modified to reflect the requirements of the BART photo survey. (See Figure 5, page 10). The fifth wheel, which triggers the sequence of image exposure, data recording and film advance, was modified to produce a triggering pulse every 26.4 feet instead of 52.8 feet as in the CALTRANS photologging system. This insured adequate overlap of the photos.
4. Film: Kodak ECN 5247, a 35mm color negative film. After exposure and processing, the negative film was edited into proper sequence and cut into rolls of no more than 100 feet. This negative color film was then printed on color positive film. Included on each roll was a photo of the data code and a copy of the record sheets indicating frame numbers and street names.

APPENDIX B

DAY OF YEAR

Day Mo.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.	1	32	60	91	121	152	182	213	244	274	305	335
2.	2	33	61	92	122	153	183	214	245	275	306	336
3.	3	34	62	93	123	154	184	215	246	276	307	337
4.	4	35	63	94	124	155	185	216	247	277	308	338
5.	5	36	64	95	125	156	186	217	248	278	309	339
6.	6	37	65	96	126	157	187	218	249	279	310	340
7.	7	38	66	97	127	158	188	219	250	280	311	341
8.	8	39	67	98	128	159	189	220	251	281	312	342
9.	9	40	68	99	129	160	190	221	252	282	313	343
10.	10	41	69	100	130	161	191	222	253	283	314	344
11.	11	42	70	101	131	162	192	223	254	284	315	345
12.	12	43	71	102	132	163	193	224	255	285	316	346
13.	13	44	72	103	133	164	194	225	256	286	317	347
14.	14	45	73	104	134	165	195	226	257	287	318	348
15.	15	46	74	105	135	166	196	227	258	288	319	349
16.	16	47	75	106	136	167	197	228	259	289	320	350
17.	17	48	76	107	137	168	198	229	260	290	321	351
18.	18	49	77	108	138	169	199	230	261	291	322	352
19.	19	50	78	109	139	170	200	231	262	292	323	353
20.	20	51	79	110	140	171	201	232	263	293	324	354
21.	21	52	80	111	141	172	202	233	264	294	325	355
22.	22	53	81	112	142	173	203	234	265	295	326	356
23.	23	54	82	113	143	174	204	235	266	296	327	357
24.	24	55	83	114	144	175	205	236	267	297	328	358
25.	25	56	84	115	145	176	206	237	268	298	329	359
26.	26	57	85	116	146	177	207	238	269	299	330	360
27.	27	58	86	117	147	178	208	239	270	300	331	361
28.	28	59	87	118	148	179	209	240	271	301	332	362
29.	29	...	88	119	149	180	210	241	272	302	333	363
30.	30	...	89	120	150	181	211	242	273	303	334	364
31.	31	...	90	...	151	182	212	243	...	304	...	365

U.C. BERKELEY LIBRARIES



C123301947